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# A New Species of the Genus *Bowerbankia* (Bryozoa, Ctenostomata) from Hokkaido<sup>1)</sup>

By

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(With 2 Text-figures)

As to the ctenostomatous Bryozoa from Hokkaido three species of the genus *Flustrellidra* have been recently reported by the author (Sh. F. Mawatari, 1971), and this is the second report on such group from Hokkaido, dealing with a new species of the genus *Bowerbankia*.

## *Bowerbankia medullaris* sp. nov.

(Figs. 1-2)

The colonies are thick, soft and fleshy, incrust and expand around on the branches of a littoral alga *Cystophyllum*. The colony is separated into two parts, outer and inner, the former being a single layer of autozooids and the latter a thick medullary region of branched stolon. Some degenerated autozooids which are sparsely arranged on the stolon are occasionally found in the latter.

The colony is gradually altered in its structure toward the middle part along the algal stem as follows. At the growing margin of the colony the stolon is slender, tubular and creeps spirally, adhering firmly to the algal stem. It is furnished with erect autozooids somewhat biserially (Fig. 1 B). Proceeding little to the middle part the stolon swells at each internode as shown in the figure (Fig. 2 D), frequently giving branches to form a thick complicated network. In the middle part of the colony the network is more complicated. The internode is often detached from the algal stem and is transformed into a well expanded sac which is provided with closely disposed autozooids (Fig. 2 E). So the whole colony gives a thick mat-like appearance.

The functional zooid with a quadrate aperture is subcylindrical in form. The polypide carries 8 tentacles and a distinct gizzard with bluish glitter. The vestibule is well-developed and usually occupies a half of the total length of autozooid.

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1) Contribution No. 918 from the Zoological Institute, Faculty of Science, Hokkaido University, Sapporo, Japan.

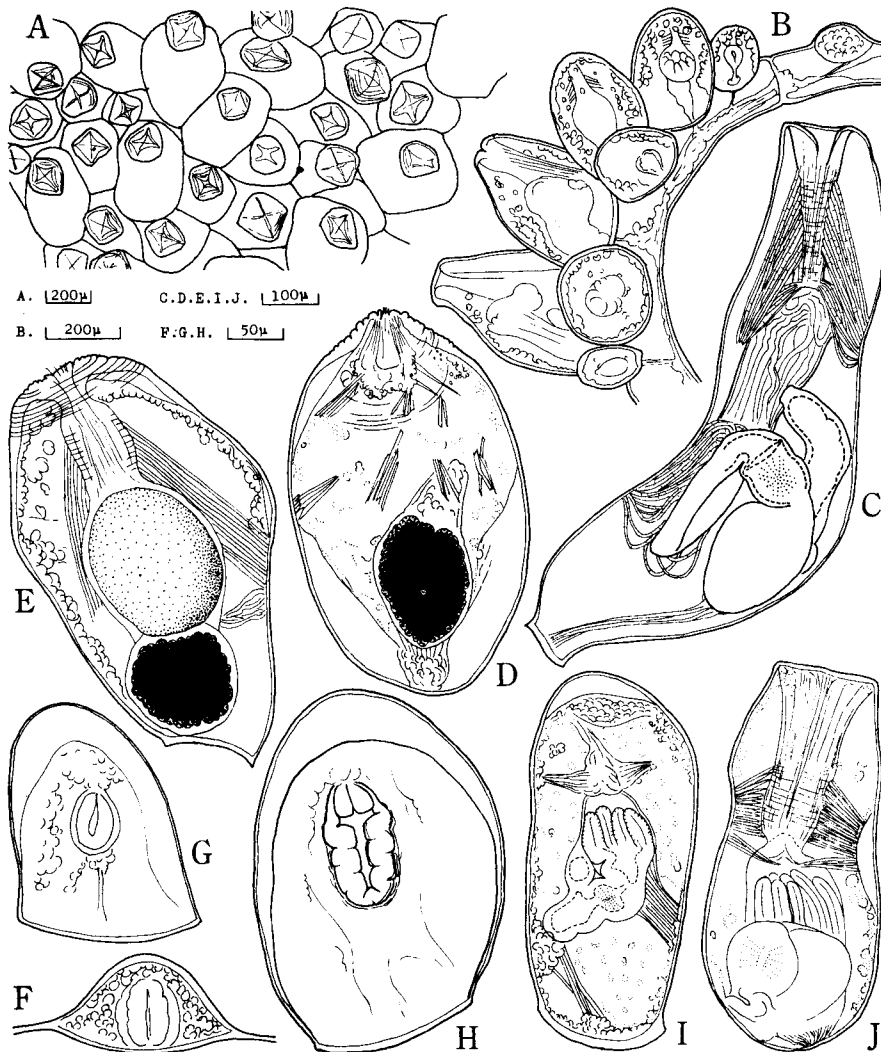


Fig. 1. *Bowerbankia medullaris* sp. nov. A, surface view of the middle part of colony. B, an internode of growing margin, showing a rather biserial arrangement of zooids. C, a functional zooid, showing its inner structure. D, a degenerated zooid with brown body, indicating an ovoid outline and a number of vestiges of apertural muscles. E, a mature zooid with egg and brown body. a vestibule and apertural muscle remained. F-J, several stages of development of autozooid. F-H, formation of polypide. I, formation of muscles. J, a young zooid with opened aperture.

Both the degenerated zooid and the mature zooid with a developed orange-colored egg, are usually oval. In the middle part of the colony the autozooid is often deformed into an asymmetrical box-like body with a distal mamillary process.

Dimensions:

Colony; length (along the algal stem) 0.5–3.5 cm.  
thickness maximum 5.5 mm.

Stolon; diameter at growing margin about  $100\mu$  or more.  
diameter at middle part maximum 3.5 mm.

Functional zooid; length  $540\text{--}960\mu$ , average  $710\mu$ .  
width  $260\text{--}450\mu$ , average  $390\mu$ .

*Notes:* The young colonies are usually small and semitransparent owing to weakly chitinized zooids (Fig. 2 A), but they generally become larger and brownish with age (Fig. 2 B).

The budding of autozooids occurs not only on the slender stolon at the growing margin but also on the inflated internode in the middle part of the colony. Therefore autozooids are disposed closely and the colony gives an *Alcyonidium*-like mamillated appearance. Moreover the medullary region of the colony described is apparently corresponding with the kenozooidal region as reported in some *Alcyonidium*-species, for example *A. gelatinosum* (Linné, 1767) (on referring to Prenant and Bobin, 1956).

The general form of zooids is somewhat variable according to their physiological conditions or to the degree of mutual pressure of their assemblage. As the development of egg proceeds, the polypide gradually degenerates and the outline of zooid is transformed into ovoidal. The asymmetrical box-shaped zooids are found in all developmental stages, young, functional, mature and degenerated stages. Those may be formed by the extreme assemblage especially at the middle part of the colony.

In the middle part of the colony the autozooids are closely disposed without fusing each other and the inflated stolons form a complicated network but are not fused each other except the connections of narrow diaphragms.

The internode on which all the autozooids lost their functions and degenerated is probably submerged to the inner part of the colony, therefore the deformed degenerated zooids with brown bodies can be observed in the medullary layer.

The present species has never been found on the other substrata than the alga *Cystophyllum hakodatense* Yendo.

*Affinities:* Continuous, fleshy and somewhat mamillated appearance of the colony consisting of two layers, autozooidal and kenozooidal, easily reminds us of a small incrusting form of *Alcyonidium* (Carnosa), but the fact that the colony is composed of independent zooids arranged along the complicatedly branching stolon indicates that the present species belongs to the Stolonifera, not to the Carnosa. It is apparent from the form and structures of zooid, especially the presence of a gizzard, that the species is included in the family Vesiculariidae.

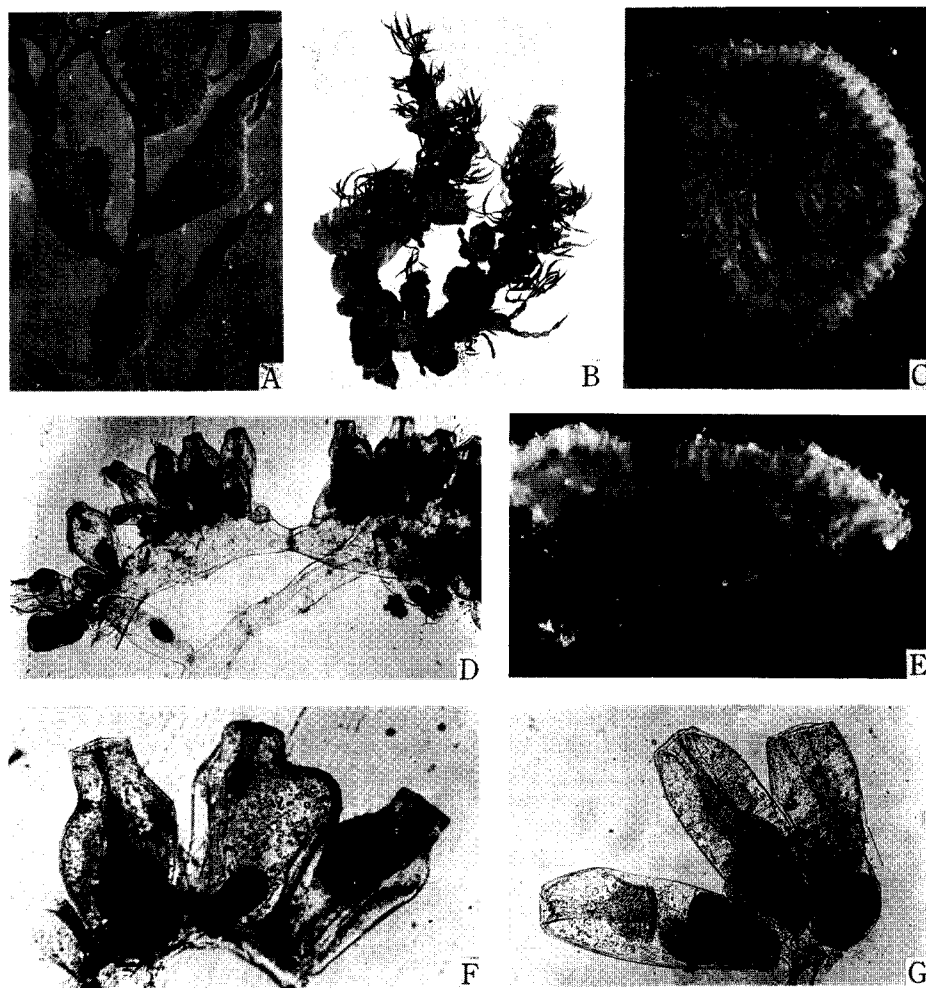


Fig. 2. *Bowerbankia medullaris* sp. nov. A, young colonies on *Cystophyllum hakodatense* Yendo.  $\times 1.5$  B, old colonies.  $\times 0.3$  C, cross section of the middle part of a colony, showing a single layer of autozooids and a thick medullary region of branched stolon.  $\times 10$  D, inflated internodes with rather irregularly arranged autozooids and buds.  $\times 20$  E, a well expanded internode at the middle part of a colony, showing closely disposed autozooids.  $\times 10$  F, asymmetrical box-shaped zooids with mamillary distal process.  $\times 50$  G, young functional zooids, showing a thin chitinization.  $\times 50$

The present species belongs to the genus *Bowerbankia* Farre, 1837 on account of the following characteristics; the number of tentacle, presence of gizzard and arising habit of zooids on creeping stolon. The species of the genus *Bowerbankia*

so far known are: *B. imbricata* (Adams, 1798), *pustulosa* (Ellis et Solander, 1786), *citrina* (Hincks, 1877), *gracilis* Leidy (1855), *gracillima* (Hincks, 1877) and *pusilla* Jullien (1903) (above species on referring to Prenant et Bobin, 1956); *arctica* Busk (1880) and *composita* Kluge (1955) (above two species on referring to Kluge, 1962); *gracilis* var. *aggregata* O'Donoghue (1926). But none of them are provided with extremely inflated internodes and with the shape of *Alcyonidium*-like colony consisting of two parts, autozooidal and kenozooidal.

The specific name of the new species reflects the presence of medullary layer.

*Materials*: Holotype collected from Akkeshi (July 1970) and all the other materials collected from Akkeshi (July 1969, July and August 1970 and July 1971), from Nemuro (August 1970) and from Notsuke (August 1970) in the Pacific coast of eastern Hokkaido. All the specimens are deposited in the Zoological Institute, Faculty of Science, Hokkaido University.

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